

Problem 3-5

(a) This is illustrated for only the waveform in Prob 3-3(a).

$$(i) F_1 = \frac{1}{\sqrt{2}} \frac{4}{\pi} A = 0.9 A$$

$$F_{rms} = A$$

$$\therefore \frac{F_1}{F_{rms}} = \frac{1}{\sqrt{2}} \frac{4}{\pi} = 0.9$$

$$(ii) F_{dis} = \sqrt{F_{rms}^2 - F_1^2} = 0.436 A \text{ using Eq 3-35}$$

$$\therefore \frac{F_{dis}}{F_{rms}} = 0.436$$

(b) This is illustrated only for the waveform in Prob 3-3(f).

$$F_0 = \frac{20}{\pi} \text{ [from Prob 3-3 f solution]}$$

$$F_{rms} = 7.071 \text{ [from Prob 3-4 solution]}$$

$$\therefore \frac{F_0}{F_{rms}} = 0.9$$

The same procedure can be used for the rest of the waveforms.